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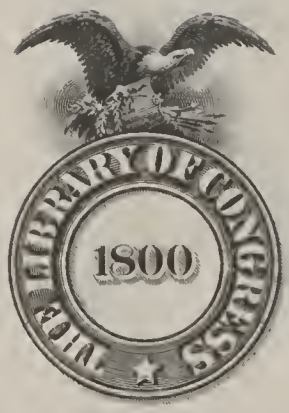
THE MYSTERY OF THE MAINE



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THE MYSTERY OF THE MAINE

AN EXAMINATION OF

PUBLIC DOCUMENTS

RELATING TO THE

DESTRUCTION OF THE U. S. S. MAINE

BY

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UNIVERSITY PARK
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PREFACE

SINCE the wish is so often father to the thought one must, to a greater or less extent, be held responsible for his opinions. In the following pages I maintain, contrary to popular belief, that the U. S. S. *Maine* was destroyed by her magazines, and that my friends may know the genesis of my heterodoxy and excuse it, this prefatory note is written.

At the time of the destruction of the *Maine* our relations with Spain were so strained that no one could doubt that war would follow if proof were found of an external explosion. Under such circumstances those who greatly deprecated war were anxious that no evidence of a mine should be discovered. For my own part, I was sadly disappointed when our special commission reported that the condition of the wreck proved that the chief damage to the ship was from without. My disappointment naturally led me to look for a weak place in the report, and this weak place I seemed to find when I noted that effects attributed to the first explosion necessarily followed those attributed to a second. This part of the report reminded me of the burglar who secured entrance to a residence by going into the owner's bedroom and stealing a latch-key with which he at once let himself into the house! I urged this objection to the report in conversations with a few war hawk friends—one a college president—but to little purpose. This was a question for experts, and experts of high standing had investigated and decided. This summary disposition of my criticism "put me on my mettle" and I looked for other vulnerable places in the report. Finding these, I took advantage of my first leisure—a vacation spent at Ocean Grove, N. J.—to prepare a somewhat lengthy newspaper article on the subject, which article, through the kind offices of the late Prof. Charles Eliot Norton of Harvard, was published, with favorable

editorial comment, in the *Boston Transcript* ~~some time in~~ November, 1898~~, November 9, I think~~. Later, I revised this article, adding extracts from government reports in support of my statements. This I did intending to publish in pamphlet form, but the work had served as a vent to my feelings, interest in the question at issue had subsided and I abandoned the idea of printing what few of my friends would care to read.

But new interest has been awakened. The wreck has been examined by another board of naval experts. This board has reported and finds that the injuries to the ship, on which the first board based its theory of a submarine mine, were the results of an internal explosion. My chief contention is thus sustained and I again decide to republish in the form of a booklet. I have said that the second report vindicates my criticism of the first. The second finds proof of a mine, to be sure, but the place assigned it is from 40 to 52 feet from that assigned in the first report, and the proofs have nothing to do with those first set forth.

The new evidence of this new mine does not seem adequate, [63] but even if it were absolutely conclusive the second report negatives the first. The damage ascribed to a mine was not the work of a mine. The report on which we rushed to war was without foundation. Let us hope that when we again find ourselves about to draw the sword to avenge an alleged insult or injury we may "remember the *Maine*" and pause before we unleash the dogs of war.

R. H. B.

Washington, D. C., January 12, 1912.

THE MYSTERY OF THE MAINE

Since the destruction of the *Maine* in Havana Harbor, February 15, 1898, startling events have followed in such quick succession that the terrible disaster already belongs to a past whose remoteness is obscured rather than revealed by Time's undiscriminating record. Because of this fact, because, measured by events, that fatal and fateful catastrophe already belongs to a distant past and because a reversal of the verdict as to its cause could in nowise affect our relations with Spain, it is now possible to canvass the attendant circumstances with the calmness necessary to the determination of facts, and with a judgment unbiased by any consideration of the results that might follow the conclusions reached.

It is true, however, that the time will never come when either an American or a Spaniard can approach the question entirely free from bias, and, other things being equal, this bias will vary directly as one's national pride and inversely as the intelligence of the investigator. Whether the dominant element in one's patriotism be hatred of other nations, pride in his country's ability to appeal from right to might, or jealous regard for her reputation for securing the wellbeing of all classes of her citizens and dealing honorably with other powers, whatever the type of

his patriotism may be, it will tend to incapacitate him for dealing in a judicial spirit with a problem so closely related to the honor of his country's flag. But while, under such circumstances, love of country must impair one's judgment, it need not wholly paralyze it, and it is possible that a patriotic American or a patriotic Spaniard may now reach a conclusion adverse to his country's claim. Still, the evidence in such case must be far stronger than would be required to convince an indifferent investigator.

That personal feelings profoundly affect the judicial faculty is recognized by every court that maintains even the semblance of justice, for nowhere will a juror be accepted, no matter how honest, intelligent and honorable he may be, if he is prejudiced for or against either litigant; nor will any self-respecting judge preside in a case in which his own feelings are directly involved.

Recent history furnishes striking examples of the fatal effects of partisan feelings upon the judicial faculty. In 1865 the 22nd Joint Rule was adopted by the two Houses of Congress, and for 11 years was eagerly championed by Republicans as a wise and judicious regulation, but bitterly denounced by Democrats as an unconstitutional and iniquitous measure. But in 1876 it became apparent that under the operation of this rule the Democratic claimant would secure the presidency; when all at once each party discovered that it had been wrong and the other right in its esti-

mate of the measure, and the Republican Senate promptly rescinded its former action and thus abrogated the rule.

The 15 distinguished jurists and statesmen who composed the historic Electoral Commission were men of great legal acumen and of unquestioned honor and integrity; but in each of the 19 decisive ballots taken, involving a variety of legal points and questions of fact, the 7 Democrats voted uniformly that both the law and the evidence sustained the contention of their candidate, while the 8 Republicans as persistently voted that both substantiated the claims of their own aspirant to the presidency. Each of the 285 votes was conscientiously cast in favor of the party to which the voter belonged, yet it is certain that at least 133 of these, and possibly 152, were cast in error, and it is not improbable that at some time during these 19 8 to 7 ballots each of the 15 members cast a vote unconsciously determined by his party affiliations. But this is not all. Congress passed upon the findings of the court in the case of each of the four states in controversy, and in every instance each congressman and senator found his judgment to be in harmony with his party's interests. To question that party feelings in these cases inhibited the judicial faculty, is to charge that our most eminent and most trusted statesmen were unscrupulously dishonest in this emergency, and unblushingly perjured themselves to secure their party's supremacy—a proposition as repugnant to reason as it is to National honor and optimistic patriotism.

That the common people, like their party leaders, are influenced in their opinions upon a given subject by its bearing upon questions in which they have an interest, is strikingly illustrated by the vicissitudes through which the doctrine of "State Rights" passed before its settlement by an appeal from ballots to bullets. Whether that doctrine found its supporters north or south of Mason and Dixon's line depended upon whether the Embargo, the Tariff, the Fugitive Slave Law or the perpetuation of slavery was the question to which it was applied. As late as 1859, a northern state, in dealing with the question of executing the Fugitive Slave Law, adopted resolutions based upon the most ultra state sovereignty principles,[1] and these resolutions were approved by the popular voice of the entire North, but condemned throughout the southern States; yet within two short years "State Rights" was the watch-word of the South, "National Sovereignty" the slogan of the anti-slavery North. In 1812 we denied the "right of search" claimed by England and argued the question with the sword; but in 1862 when an American officer exercised this right the popular House of Congress tendered him a vote of thanks and the Executive, after apologizing to England for the offense, promptly re-

1. Wisconsin. March 19, 1859, the legislature resolved "that the several states that formed the instrument (the U. S. Constitution) being sovereign and independent, have the unquestionable right to judge of its infractions; and that a positive defiance by these sovereignties of all unauthorized acts done under color of that instrument, is the rightful remedy." Alexander Johnston in Lalor's Encyclopedia.

warded the offender by a material promotion;[2] and the action of the President as well as that of the House has been almost universally approved by the American people.

But it is needless to multiply illustrations; no intelligent person will question the fact that either interest or sentiment will fatally impair the judgment of the most intelligent and conscientious person, and it follows that neither the American court nor the Spanish is to be accused of acting in bad faith merely because an erroneous decision was reached. Only the intentional suppression of unfavorable evidence, or the wilful failure to procure available testimony germane to the issue, can fairly subject either court to censure. But it follows also that the finding of neither court is entitled to serious consideration as a judicial act, since according to universally recognized principles of jurisprudence neither was competent to decide the question at issue; in each case court, counsel and witnesses were all prejudiced the same way with feelings wrought to high tension. It was a foregone conclusion that in the absence of positive evidence one way or the other, the two courts would reach diametrically opposite conclusions.

But there were considerations other than national prejudice and personal friendship to influence the decisions of these courts. The members of our own, in

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2. See Sketch of Charles Wilkes in Dict. Am. Biography.

common with a large majority of the people of the United States, were fully persuaded that it was our imperative duty to put an end to the horrible state of affairs existing in Cuba. This duty the government seemed loth to perform. Capital invested in foreign commerce was opposed to war and it was feared that dollars would prove more potent than duty. If proof could be found that this heartrending disaster was due either to criminal inefficiency or to fiendish treachery, such a storm of indignation would be aroused that government would be forced to abandon its dilatory tactics and take a firm stand in behalf of justice and humanity. A decision against Spain, even if erroneous, would merely bring upon her the just retribution already too long delayed; while a mistake in her favor would add one more to a long list of unpunished crimes. Under such circumstances no stone should be left unturned to make a case against the oppressor of Cuba, and no facts should be unnecessarily uncovered that would weaken the technical case against a notorious criminal. Nor is this all. A war with Spain must necessarily be largely a naval war, hence the navy must be greatly strengthened, involving many promotions. Spain was bankrupt, exhausted, and rent by civil feuds. Victories under such circumstances would be easy and certain. But the laurel is always for the victor's brow regardless of the odds in his favor, hence war with Spain was full of promise for Sampson and his associates. Again, the first shot

fired by a Spanish gun would give us a mortgage upon all Spain's numerous and valuable possessions. For half a century we had schemed for the acquisition of the "Pearl of the Antilles" in the interest of slavery and our palms had not yet ceased to itch. To carry the Stars and Stripes to richer lands and strike Spanish shackles from millions of struggling patriots, and at the same time afford thousands of our embryo statesmen an opportunity to serve their country in teaching these people how to be governed by Anglo Saxons, would necessarily inure to the benefit of the political party through whose agency these ends should be achieved. Under such circumstances an impartial investigation was absolutely impossible.

The Spanish investigators had still stronger reasons to wish for the result they found. If it should be found that our ship was blown up by design, disastrous war and merciless despoilment were believed to be inevitable, and these would mean humiliation to the Spanish navy in particular, a humiliation that the members of this court must share.

As neither court could possibly conduct a fair investigation it will ever be a matter of profound regret to every true American that our government declined Spain's proposition that both sides should be represented in the original investigation,[3] that it refused to submit the matter to impartial investigation after

3. Senate Document 230, 55th Congress, 2d Session, pp. 88, 89 and 91.

conflicting decisions had been rendered upon ex-parte evidence,[4] and finally, when all our demands had been conceded by Spain, that it again for the third time refused an impartial investigation when humbly implored by a prostrate foe as a means of purging himself of a charge a thousand fold more humiliating than all the adverse fortunes of war.[5] This last refusal must always be the most difficult for us to explain to the world at large. There was then no pressing emergency upon us demanding that we should stand together; no national interests were at stake; the fires of revenge had been quenched in the blood of many thousands of our enemies; we had exacted not merely an eye for an eye and a tooth for a tooth, but many times the ancient merciless penalty. We knew too, that disinterested experts, even those most friendly to us, had expressed grave doubts as to the justice of our charge. "Engineering," the leading journal of its class in England, had editorially rejected the conclusions of our court.[6] Col. Bucknill, R. E., who had assisted in conducting the most noted series of mine experiments ever undertaken—those upon the *Oberon*—had published his conviction that the mine theory not only involved the improbable, but the impossible.[7] Admiral Columb, whose expert services in

4. Special message of Pres. McKinley, April 11, 1898.
5. Proceedings of Paris Peace Commission, Dec. 2, 1898, reported in the American dailies Dec. 3, 1898.
6. Engineering, London, April 22, 1898.
7. Engineering, London, July 24, 1898.

the *Dotterel* case give his opinions unusual weight, had pronounced the mine theory wholly untenable,[8] and Prof. Goldwin Smith had asserted that it is the opinion of the world's independent experts that the destruction of the *Maine* was the results of an accident.[9] Nine-tenths of Christendom had charged us with unfairness in our dealings with Spain,[10] and needlessly to give color to the charge was more than a diplomatic blunder, it was a crime against our country's fair name, and must forever remain an indelible stain upon her sacred escutcheon. To have submitted the question to expert investigation would have been evidence of faith in the justice of our contention; a favorable verdict would have vindicated our claims; while an adverse decision could have done nothing more than convict us of having reached a hasty conclusion, unwarranted by a fuller investigation.

But while our government has refused a fair trial of the case it has published in full the testimony on which the verdict against Spain was found, and if on examination this testimony shall be found to fall short of a demonstration of guilt, we may strongly suspect that had our witnesses been cross-examined by opposing counsel, and the defendant been allowed to intro-

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8. National Review, June, 1898.

9. "That the Maine was destroyed by an accidental explosion of the kind by which the St. Paul, the Oregon and the Obdam have since narrowly escaped destruction, is the opinion of independent experts, and may yet be the verdict of history." Goldwin Smith in Forum, November, 1898.

10. Niblock, Engineering, London, April 26, 1898.

duce rebutting evidence, even a prejudiced court might have failed to convict. And if we find, further, that the facts established by an ex-parte investigation do not warrant us, with our American prejudices, in heartily approving the findings of our court, we must concede that these facts are utterly inadequate to convince the impartial historian who will write the final verdict. And if we find still further that important evidence easily obtainable, was not procured, and that other facts established by the testimony were apparently ignored, it will tend still further to impair our confidence in the correctness of the conclusions reached.

A satisfactory inquiry as to the origin of the explosion would doubtless involve the services of able and unbiased experts, but to determine its character and extent and the probable location of the explosives is a very different problem, since the published testimony can easily be understood by anyone who will take the trouble to familiarize himself with a few nautical terms, the general structure of an iron ship and the special arrangement of certain parts of the *Maine* directly involved in the catastrophe.

To obtain a general idea of the framework of a steel battleship, place the skeleton of a herring upon its back. The backbone will represent the keel, and each pair of ribs a "frame." Connect the ribs of each pair by four horizontal wires nearly equidistant, and we have the "deck-beams." Connect the ribs and also these wires by other wires paralled to the back-bone

and a shipbuilder would readily recognize the "longitudinals" and "stringers." Now imagine this skeleton to be enlarged till it will fill an ordinary street from curb to curb and the backbone extend from cross-street to cross-street, while the ribs reach the roofs of three-story houses, and we have a fair idea of the framework of a vessel 318 feet long, 57 feet "beam" and 32 feet from fourth deck to bottom of keel.

In the *Maine* the keel was double, consisting of a massive compound steel beam placed on edge—the "vertical keel"—and below this a similar one upon its side—the "flat keel." The frames, securely bolted to this compound keel, were four feet apart except near stem and stern where the distance was somewhat less. To allow room for boilers and machinery, the two lower decks were left out near the middle of the ship, hence above the boilers there were but the two decks that were blown up and thrown back upon the comparatively uninjured after part of the vessel. The forward boilers were just aft of frame 31, and the boiler-room extended from frame 31 to frame 41, 10 frame spaces, or 40 feet. The spaces between decks were divided into numerous small compartments by steel partitions called "bulkheads" which, bolted to the deck-beams, reinforced the stanchions and increased the rigidity of the structure. By reference to plates[11]

11. See Exhibit L, Maine Report (Senate Doc. 207, 55th Congress, 2d Session) and Hold Plan and Longitudinal section, Affairs in Cuba, Senate Report 885, 55th Congress, 2d Session.

in government publications it will be seen that the forward magazines were stored in the lowest of these rooms between frames 18 and 25.

With the above facts in mind we are prepared to take up the report of the commission, and in the consideration of this report certain preliminary questions first claim our attention: the number of distinguishable explosions, the time of the destruction of the dynamos, etc.

There were necessarily several explosions, though probably but a single perceivable report. Since the magazines involved were separated one from another by steel bulkheads, whether a given magazine were fired by an adjacent magazine of low explosives, or by a mine of high explosives beneath, there would of necessity be an actual, though perhaps practically infinitesimal, interval between the two explosions, but not sensibly greater in the one case than in the other. In fact it is hardly possible that the interval could be detected by the ear in either case, as suggested by Lieut. Holman. More than 40 witnesses testified as to the number of explosions, indicating that this was regarded as an important matter. At first view the testimony appears hopelessly conflicting; but upon closer study many of the seeming contradictions can be completely harmonized. Sound is transmitted more rapidly by water than by air, and still more rapidly by iron. The distance traversed in one second through iron would require four seconds through water, and

sixteen seconds if air were the only medium. An observer on the *Maine* would get the report of an explosion in her hold through the iron framework and also through the air, and if the interval between the times of receiving it exceeded one-sixteenth of a second, it would be heard as two reports differing in character according to the medium of transmission. The possible distance of a witness on board, from an exploding magazine, was 260 feet, and the report would have been received through the framework at this distance full one-fifth of a second before it could have been heard through the air alone. Observers at a less distance from the magazine would have noted a smaller interval—those at seventy feet or less, none at all. The report would reach the Washington, 800 feet from the magazines, as estimated by. Capt. Sigsbee,[12] as two reports more than half a second apart. Only two distinct reports heard on the after part of the *Maine* or at more distant points would be proof of but a single explosion, and witnesses at different distances would necessarily observe different intervals between the reports heard. Again, the evidence submitted proves that single masses of wreckage, weighing many tons, fell over upon the uninjured portion of the vessel and necessarily produced tremendous concussions that might have been easily mistaken for additional explosions, by excited men within the zone of a single

12. Maine Report, p. 11.

distinguishable report. Of the 45 witnesses who testified as to the number of reports, 15 on board the *Maine,* including the highest officers, testify to a single report;[13] 10 others bear witness to a jar followed by a report, and the first of these testified as an expert that both jar and report were the result of the same explosion.[14] Six persons so located that two reports

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13. I.—Capt. Sigsbee. Q. By the time you reached the quarter-deck were all the larger explosions over? A. So far as my experience is concerned there was simply one overwhelming explosion. (P. 16). II.—Lieut. Commander Wainwright. Q. Please state your experience of the shocks and noises you heard during the explosion. A. I only remember one very heavy shock. (P. 27). III.—Paymaster Ray. Q. Will you please state to the court what shocks you experienced and what noises you heard? A. My first impression, my first shock, you might say, was a sort of upheaval. After that the only explosions I heard were from the City of Washington, of the small arms. (P. 38). IV.—Chaplain Chidwick. Q. How many shocks did you feel? A. I remember only one. (P. 56). V.—Cadet Boyd. Do you remember how many shocks you felt? A. It was one continuous shock. Q. One continuous shock was all you felt? A. All I felt. (P. 139). VI.—Lieut. Catlin. Q. How many shocks did you feel? A. I felt only one, sir. (P. 143). VII.—Carpenter Helm. Q. Please state what you felt, heard, and saw during the explosions. A. I only heard one report. (P. 149). VIII.—Asst. Engineer Morris. Q. Will you please state to the court what you felt, heard, and saw of the explosion? A. I was thrown from my chair and what I remember of the explosion seemed to me continuous for an appreciable length of time. (P. 155). IX.—Cadet Crenshaw. Q. How many shocks did you feel? A. I can't say that I felt but one, sir. (P. 157). X.—Private McKay. Q. One explosion? A. One explosion. Q. Was that the shock? A. The shock and the explosion was at the same time. (P. 161). XI.—Boatswain's Mate Bergman. Q. Do you remember more than one shock? A. That is all, sir. (P. 177). XII.—Landsman Fox. Q. You heard but one explosion? A. Yes, sir; but one explosion. (P. 180). XIII—Fireman Pank. Q. You heard an explosion on board the ship? A. Yes, sir. Q. One or two? A. I only heard one, sir. (P. 186). XIV.—Mess Attendant Turpin. Q. You felt but one shock? A. I felt only one shock. (P. 192). XV.—Landsman Kane. Q. You mean, when you first heard the noise begin, the roar came immediately; or was there an interval? A. It sounded like the gun was fired, and you heard the roar for a good while afterwards. (P. 201).

14. I.—Lieut. Holman. Q. Please describe your experience in full? A. While conversing with Mr. Jungen and Jenkins, a heavy explosion occurred, which was evidently in the forward part of the ship. This explosion shook the ship violently, and the noise it

would necessarily be heard from each explosion, testify

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made consisted of a low grumbling, comparatively speaking, a low and heavy grumbling, followed by a heavy booming explosion. It was precisely similar to many other submarine explosions I have heard, excepting that it was on a much larger scale. A submarine explosion always gives two shocks—one transmitted by water, the other immediately following—the atmospheric shock. The lights went out at once, and we were left in darkness. Q. You have had considerable experience at Newport in matters of explosives, I believe. What was your impression of the whole affair? A. My impression, not verified as yet by what the divers are finding, is that a very heavy mine went off under the Maine's bottom. Q. Did you think that the explosion of this mine—remember I am only speaking of your impression—was followed by the blowing up of the Maine's magazines? A. The noise produced by a heavy mine would be great in itself, and adding this noise to it would probably be coincident, (sic), practically forming one and the same explosion. From the noise alone I can hardly form an opinion whether the magazine went off also. (Pp. 22 and 23). II.—Surgeon Henneberger. Q. Will you please state to the court what shocks you felt and what noises you heard at the time of the explosion? A. I felt a sudden upheaving of the ship. The lights were extinguished, and this was followed immediately by a deep boom, as of an explosion. That was all I heard. (P. 39). III.—Private Anthony. Q. Please tell the court what you felt and what you saw. A. I first noticed a trembling and buckling of the decks, and then this prolonged roar—not a short report, but a prolonged roar. (P. 40). IV.—Lieut. Blandin, Q. Please state to the court your experience of the explosion. A. Mr. Hood was talking to me when the explosion occurred. I am under the impression that there were two explosions, though I could not be sure of it. Q. You say you heard two explosions? A. That is my impression, sir; though I could not be positive. I think there were two. Q. Similar explosions? A. So far as I can judge, sir. When the first explosion took place the ship quivered. The shock, as I said, was not so great where I was, and my impression is there was a second one, but the difference in similarity I could not describe. V.—Lieut. Hood. Q. Which was the larger explosion; which gave you the greater shock, the first or the second? A. The first was more of a feel. I mean, you felt the first explosion more than you saw it. I felt the whole ship just go up and tremble and vibrate all over. . . . The second was a kind of open explosion. . . . There was no appreciable time between these two explosions. (Pp. 120-1). **Witness was at frame 66, upper deck—interval 1-6th of a second.** VI.—Cadet Bronson. Q. How long after that shock did you feel the explosion? A. I cannot state, sir. Q. Was there a distinct interval? A. I am not prepared to state, sir. (P. 137). VII.—Seaman Morinlere. Q. Tell the court exactly what you felt, what you heard, and what you saw. A. I heard a jar, and after this jar the explosion went up through the middle superstructure. I heard a jar first, and almost the same time of this jar the whole middle superstructure went up in fire, sir. Q. What did the explosion feel like to you? A. Just a jar, sir. (P. 176). VIII.—Seaman Larsen. Q. Can you describe more carefully the first shock? A. It was

that but two were heard.[15] Six others more or less injured by the explosion that destroyed the decks, knew nothing of any preceding explosion.[16] But the

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just a jar, shaking all over. Q. Was there a distinct interval between the two, do you think? A. There was a very little between each other, because I didn't have time to turn around. (P. 174). IX.—Fireman Gartrell. Q. You felt the ship tremble before this explosion? A. Before this explosion; yes, sir. (P. 189). X.—Seaman McCann. Q. Was the first shock that you felt accompanied by any sound; was there any report? A. No; not the jar. There was no report to the jar, sir. Q. Then there was but one report, was there? A. That is all I remember hearing; there might have been more. Q. That is what we want. You heard only one report, but you felt the jar before the report came? A. Yes, sir.

15. I.—Wm. H. VanSyckel. Q. Please state to the court what sound you first heard that made you leave your house and go out. What was the nature of it? A. First a rumble. Then a terrific explosion. That rumble startled us and then the explosion was almost instantaneous. (P. 50). II.—Capt. Teasdale, Bark Deva. Q. How many explosions did you hear? A. I heard two distinct explosions. The first one was very sharp one, and when that explosion took place it was as though some steamer had collided, and the shock was something tremendous. Q. That is to your own ship? A. Yes; I am alluding to my own vessel at the present time. Then there was a tremendous explosion after that. (P. 54). III.—Sigmund Rothschild, passenger on board the City of Washington. Q. You are certain there was a distinct interval between the first shot and the blowing up? A. Sure, because it was the shot which made me look first in that direction. (P. 60). IV.—Louis Wertheimer, on board the City of Washington. Q. Please tell us what you heard and saw. A. I heard a report, a minor report, minor in comparison with the greater report which immediately followed, and at an interval of anywhere from five to fifteen seconds following this first minor report came a great explosion. **Afterward said he had overestimated the time.** (P. 63). V.—First Officer Cornell, City of Washington. Q. What interval was there between the rumbling noise and the explosion? A. I think there must have been about fifteen or sixteen seconds—not a full minute. Q. That is, a long time? A. Almost immediately; there was not much of an interval. (P. 219). VI.—Capt. Stevens, City of Washington. Q. Please tell the court what you heard and saw. A. I heard a dull, muffled explosion, and commotion, like as though it was under water, followed instantly by a terrific explosion. (P. 220).

16. I.—Boatswain Larkin. Q. Please describe what you felt and saw. A. I remember hearing an explosion. I do not remember the violence of it. I was struck on the head about the same time and dazed. (P. 147). II.—Apprentice Dressler. Q. Tell the court exactly what you felt, heard and saw. A. I didn't feel anything, nor I didn't see anything. . . . I didn't feel no shock, nor I didn't see anything at all. Q. The first thing you knew was when you recovered from being knocked senseless? A. **Yes, sir.** (P. 165).

court found these decks to have been blown up by the ship's magazines, hence the testimony of these witnesses must be included in that favoring the theory of but one report. This makes 37 that must be counted as testifying either directly or indirectly to a single explosion. Of the remaining eight, five testify to two quite distinct reports,[17] one, to two shocks and a very

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III.—Sergeant Meehan. Q. State exactly what you felt, heard and saw. A. I was in the gangway when I first heard this explosion. The next thing I knew about it I was fired overboard. Lifted clean off the gangway and fired into the water. The next thing I was picked up by a boat. Q. You heard only one explosion? A. Only one explosion. Q. Did you feel any shock before that explosion? A. The explosion and the shock, I thought, was both together. Q. Were you knocked senseless? A. No. (P. 167). IV.—Corporal Thompson. Q. Did you go up in the air at the very first shock you felt? A. That was the first thing I realized. (P. 168). V.—Seaman Rau. Q. How many explosions did you hear? A. I didn't hear none at all. **Was awake; not stunned, but blown overboard.** (P. 187). VII.—Seaman Mattson. Q. State exactly what you felt, saw, and heard. A. It was just the same as if I seen lots of smoke, and I went right up in the air. I don't know where I went to. After that I didn't remember till I was lying aft on the quarter-deck. Q. You felt only one shock? A. Yes, sir. Q. And that landed you on the quarter-deck? A. Yes, sir. (P. 190).

17. I.—Cadet Holden. Q. Will you please state to the court what shock you experienced and what noises you heard at the time of the explosion? A. At the time of the explosion, first, there was an explosion of considerable force, and about three or four seconds afterwards there was another explosion of far greater force, and a terrible shaking. (P. 31). II.—Lieut. Blow. Q. Will you state to the court what you experienced during that explosion? A. I was writing at the time, and heard forward, and apparently at some distance, that is to say, well up in the bow, as far as I could judge by the sound—an explosion. Instantly the lights went out. I rushed out of my room to see the cause of it, and before I could get more than probably six feet from my room a second and more violent explosion followed. This second explosion I would describe as being a continuous explosion, lasting for several seconds, and accompanied by the falling of lights, electrical fittings, furniture, and by a crashing and rending of metal. III.—Apprentice Ham. Q. Tell the court exactly what you felt, heard and saw of the destruction of the Maine. A. I was facing forward when I saw a flash of light—a flame, which seemed to envelop the whole ship—followed by a report. I was struck in the face by a flying piece of iron. Then there was a perfect hail of flying iron, that fell all about me. Then the second report. Q. You speak of two reports?

great vibration;[18] one, to a "series of convulsions," and a crash;[19] one, to a "deafening roar," a "tremendous crash," and three "explosions."[20] Such discrepancies are readily explained in the manner above indicated, upon the theory of a single explosion, hence the testimony of the eight does not, in any appreciable degree, neutralize that of the 37. But upon the charac-

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A. Yes, sir; it sounded like a roar, the second one. Q. What did the first one sound like? A. It was a sharp report. Q. How far were they apart? A. There was an interval of a couple of seconds. (P. 162). IV.—Master of Arms Load. Q. Please state to the court what you felt, heard and saw. A. You could see a red flame outside the ship. It seemed as if it was a small boat had struck the ship first. She seemed to tremble, and then the whole deck where I was standing seemed to open, and there was a flash of flame came up. Then I found myself below and could hear a second explosion. Q. How did the second report differ from the first one? A. It didn't seem to be as loud a report, as the first one was. Q. It did not seem to be as loud? A. Not as loud, sir. (Pp. 171, 173). V.—Coal Passer Melville. Q. Tell the court exactly what you felt, heard and saw. A. I felt something like electrician right under my feet. Q. An electric shock, I suppose you mean? A. Yes, sir; and she listed over on the port side. The port was under water. I made my way to the starboard gangway, and then I heard the second report. Q. How long was it before the explosion occurred after the first shock? A. It appeared to be about a half minute between the two explosions. Q. Almost immediately, do you think? Half a minute, you know, is quite a little space. A. The first explosion raised up part of the superstructure, etc., and twisted it right over my head. I made under it for the starboard gangway. When I got to the starboard gangway the second explosion occurred.

18. VI.—Cadet Cluverius. Q. Will you please state to the court what shocks you experienced and what next you heard? A. My first knowledge of anything occurring was a slight shock as if a 6-pounder gun had been fired somewhere about the deck. After that a very great vibration in my room, which was then followed by a very heavy shock, and still continued vibration and rushing of water through the junior officers' mess room, and the sound as if something breaking up all the time. (P. 30.)

19. Chief Engineer Howell. Q. Will you please state to the court what noises you heard and what shocks you felt at the time of the explosion? A. I was suddenly startled with an unusual shock. There was a continuous series of convulsions . . . then a tremendous crash; then apparently the sound of falling debris. (P. 34.)

20. Lieut. Jungen. Q. Will you please describe to the court your experiences of the explosion, all you saw, heard, and felt up to the time that the whole thing was over? A. It (the initial dis-

ter of the explosion we have reliable expert testimony. *H. M. S. Dotterel* is known to have been destroyed by the explosion of her magazines, and Vice Admiral Columb who, as government expert, reviewed the report of the *Doterel* commission, has carefully examined the report of our court of inquiry, as published in Senate Document 207, 55th Congress, 2d Session. Commenting upon the report in The National Review (London), June '98, he uses the following language: "Reading the evidence that was before the U. S. Commission, is like re-reading the evidence that was before our own court (Sic) in all that pertains to the character of the explosion." Yet upon this testimony our court found as follows: "There were two explosions of a distinctly different character with a very short but distinct interval between them."

The dynamos were 18 feet above the keel and from 36 to 44 feet abaft of frame 18. Between this frame and the dynamos were nearly all the forward magazines. Of course it would be possible for a mine at frame 18 to destroy dynamos so situated without first exploding the intervening magazines, but, to say the least, such a thing would be highly improbable. And when we consider further that these dynamos were

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turbance) was not an explosion. It was a dull, deafening roar, followed immediately by a tremendous crash. . . . As I was coming up the ladder I heard three—I think it was three—distinct explosions. One of them was more powerful than the other two. Q. Did you not testify to two shocks, two explosions? A. I testified to the original roar and crash, and then, as I remember, three distinct explosions, one of them being more violent than the rest of them. (Pp. 132 and 134.)

directly over the magazines found by the court to have exploded, and between these magazines and the decks found to have been blown up by their explosion, we can have no reasonable doubt that the dynamos were destroyed by the magazines. As the dynamos were 40 feet astern of frame 18, a mine at that frame could not break the currents to the after part of the vessel, so we may safely assume that the lights in this part of the ship were extinguished by the destruction of the dynamos themselves. No attempt was made by the court to ascertain when the lights went out. Twelve witnesses state incidentally that the lights went out at the beginning of the disaster, but none of these were cross-examined upon this point.[21] One stated in the

21. I.—Capt. Sigsbee. Q. Please state your experience in full. A. I was just finishing a letter to my family when I felt the crash of the explosion. It was a bursting, rending and crashing sound or roar of immense volume, largely metallic in its character. It was succeeded by a metallic sound—probably the falling debris—a trembling and lurching motion of the vessel, then an impression of subsidence, attended by an eclipse of the electric lights and intense darkness within the cabin. . . . Q. By the time you reached the cabin were all the larger explosions over? A. So far as my experience is concerned there was simply one impression of an overwhelming explosion. (Pp. 15-16.) II.—Lieut. Holman. (See note 14, I, above.) III.—Surgeon Henneberger. Q.—Will you please state to the court what shocks you experienced and what noises you heard? A. I was lying in my bunk reading, and I felt a sudden upheaving of the ship. The lights were extinguished, and this was followed immediately by a deep boom, as of an explosion. (P. 30.) IV.—Captain Chidwick. Q. Please state to the court what shocks you felt, what noises you heard, and what you saw in regard to the explosion. A. I heard a loud report, and everything became dark as soon as I heard the report. The lights were out and there was a crashing sound of things falling. (P. 56.) V.—Cadet Boyd. Q. Please state what you saw, heard and felt. A. I was sitting in the steerage reading at the time. The lights went out. A crashing booming was heard. (P. 139.) VI.—Lieut. Blow. Q. (See note 17, II.) VII.—Cadet Bronson. Q. Please describe what you heard and felt and saw. A. My first impression was that a salute was being fired. That was before the crash

same casual way that the lights went out subsequent to the "deafening roar," and he was cross-questioned and led to say that he thought the dynamos were destroyed by the second explosion.[22] This witness was in the same room with Lieut. Holman, who testified to a single explosion extinguishing the lights "at once." Both questions and answers assume that the dynamos were destroyed by the explosion that wrecked the vessel amidships, and, as above intimated, the facts fully warrant the assumption, indeed no other hypothesis seems tenable. But the evidence is conclusive that, however many explosions there may have been, the

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came. That is the impression that I have now. That was the first thought that entered my mind. Then my bunk was lifted beneath me, and the ship listed over to port. The lights were out and I heard the water rushing outside in the passageway. Q. How long after that shock did you feel the explosion? A. I cannot state, sir. Q. Was there a list of the ship at the first explosion? A. Almost simultaneously with the explosion. (P. 137.) **(Observe that shock, report and list were practically coincident, leaving the lights out.)** VIII.—Lieut. Catlin. Q. How many shocks did you feel? A. I felt but one, sir. Q. The lights went out at that shock? A. Yes sir; immediately. (P. 143.) IX.—Cadet Crenshaw. Q. Please state to the court what you felt, heard and saw of the destruction of the Maine. A. I don't remember hearing anything. The lights went out, and I felt a shock, but I don't remember of hearing a noise of any kind. (P. 157.) X.—Master at Arms Load. Q. Were the lights out at this time? A. The lights were out as soon as the first flash. (P. 173.) XI. Fireman Cantrell. **Describing events immediately following the only explosion he heard, says:** "The two of us jumped up, and I went on the port side of the engine-room ladder, and Frank Gardner, he went up the starboard side—at least he didn't go up, because he hollered to me. He struck the door right where the partition separates the two doors, and he must have struck his head. . . . Everything was pitch dark." (Pp. 188.) XII.—Mess Attendant Turpin. "It was a jarring explosion—just one solid explosion, and the ship heaved and lifted like that, and then all was dark. (P. 191.)

22. Lieut. Jungen. "There was sufficient interval between the time it took me to get from the end of that table to the door opposite in the mess room before the lights were extinguished, so that I saw what appeared to me a thick dust or ashes or brown

lights went out at the first; hence there remains hardly the shadow of a doubt that the first explosion destroyed the decks above the boilers. In other words, the first explosion was that of the ship's magazines. But, the finding of the court is that "the second explosion was caused by the partial explosion of two or more of the forward magazines of the *Maine*," and the decks were blown up by this explosion.

Little importance should be attached to such movements of the *Maine* as might be noted in the excitement immediately following the disaster. If destroyed by her magazines, the forward part of the uninjured portion would immediately be lifted, as will be explained below. If destroyed by a mine at frame 18 a lift would also occur, but the movement of 7,000 tons of material would not be instantaneous. In either case a vessel so injured would soon begin to sink, and in the excitement it would be difficult to note these movements and distinguish them carefully. Of 23 witnesses on board the *Maine* cross-examined upon this point, 13—three of whom were standing or walking at the time—say they noticed no movement at the

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smoke." Q. You have not stated whether the big explosion was the first or the second or the third, and you have not stated definitely at which time the lights went out. A. The first explosion, as I said, was a dull, deafening roar, followed immediately by a crash. By the time I got to the door, I should say, the lights all went out. Then there was another explosion, which was more violent than any explosion I had heard, that I could not liken to anything except possibly the explosion of a magazine. Q. When did the lights go out with reference to this second explosion? A. About simultaneously. Q. Then you think the dynamo may have been destroyed at the second explosion? A. Yes, sir. Q. And not by the first? A. Not by the first.

first shock.[23] Of the eight who report a movement at this time, four say the vessel was "picked up" or "lifted,"[24] while the other report only a lurching, a swaying, or a listing.[25] Four witnesses on board the

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23. Lieut. Holman. Q. When you first heard the rumbling noise you spoke of, did the ship list either way? A. Not as far as I observed. II. Lieut. Commander Wainwright. Q. Did the ship list any at this time? A. The first I noticed was after we commenced lowering the boats—a list to port. (P. 27.) III.—Chief Engineer Howell. Q. Did you notice any list of the ship at the first explosion or the first shock? A. No, sir. (P. 34.) IV.—Paymaster Ray. Q. At the first shock you felt, did you notice any perceptible list of the ship? A. No, sir. (P. 38.) V.—Surgeon Henneberger. Q. What I wish to know is whether, at the very first shock you felt, there was a perceptible list. A. No. (P. 39.) VI.—Lieut. Blandin. Q. When you first felt the explosion did you notice any list of the ship? A. None whatever. (P. 114.) VII.—Lieut. Hood. Q. What I mean is, did the ship give a sudden list either to starboard or port at the first explosion, as if something had struck on her side? A. I didn't notice any special list at the first shot. (P. 121.) VIII.—Lieut. Blow. Q. Did the first explosion, or whatever it was, list the ship any? A. I think not. (P. 130.) IX.—Lieut. Jungen. Q. Was there any perceptible list or lifting of the ship at the first explosion? A. I did not notice that. (P. 134.) X.—Cadet Boyd. Q. Was there any list of the ship? A. Not till we got into the passage. (P. 140.) XI.—Lieut. Catlin. Q. Did she seem to be lifted at the time of the shock? A. I didn't notice it, sir. (P. 143.) XII.—Carpenter Helm. Q. Did the ship seem to shake or shiver any during this report? A. None that I can remember. (P. 149.) XIII. Apprentice Ham: Q. Did you feel any trembling or shaking or lifting of the ship at the first explosion? A. No. sir. (P. 162.)

24. I. Cadet Holden. Q. Did the ship list during either of these explosions? A. She seemed to be picked up and listed slightly to starboard. Q. Was that the first or second explosion? A. It seemed to me to be the first. (P. 31.) II. Cadet Bronson. Q. Was there a list of the ship at the first explosion? A. Almost simultaneously with the explosion. Q. There was a list? A. Yes, sir. Q. Which way? A. To port. Q. The ship settled to port? A. Yes, sir. Q. But she never was lifted up? A. I was lying in my bunk and I felt my bunk lifted under me. Q. That was at the first shock? A. The first shock; yes, sir. (P. 137.) III.—Private McKay. Q. The ship seemed to rise, did it? A. Yes, sir, it seemed as if something lifted her up and tipped her right over on the port side. (P. 161.) IV.—Mess Attendant Turpin. Q. Lift which way? A. She lifted up and listed to port. (P. 191.)

25.—I. Private Anthony. Q. Did you notice any perceptible list of the ship at the first shock? A. At the first shock the ship instantly—that is, the quarter deck where I was standing—dipped forward and to port, just like that (indicating). It apparently broke in the middle like that (indicating) and surged forward, and

City of Washington state that they were looking directly at the *Maine* at the time of the explosion, or an instant afterwards, but they did not all see the same things. One says that her bow was lifted slightly at the first explosion and the whole vessel to a marked degree at the second, but less at the stern.[26] Another says there was no upheaval at the "first shot," but that the *Maine* rose about three yards at the second explosion.[27] The third saw no movement at all,[28] but the fourth saw a great deal.[29] His testimony is that she "lifted most nearly all out of water," and that he "saw her raising by her lights," which, it will be remembered, were instantly extinguished by this ex-

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then canted over to port. (P. 40.) II. Chaplain Chidwick. Q. Did you notice any list of the ship when that shock was experienced. A. It struck me that I did, to the port side. I am not positive about that. (P. 56.) III. Naval Cadet Crenshaw. Q. How many shocks did you feel? A. I can't say that I felt but one, sir. Q. Was it a lurch of the ship or a shaking of the ship, or what? A. It seemed to be a lurch of the ship. (P. 157.) IV.—Fireman Gartrell. Q. You felt only one continuous shaking? A. Yes, sir. (P. 189.)

26. Sigmund Rothschild. Q. You saw the ship move at each of the explosions? A. At the first shot the bow of the boat just lifted about that much (indicating). At the second one it was more of an upheaval of the hull, with the exception of less here at the stern. (P. 61.)

27. Louis Wertheimer. Q. I am now referring to the first shot you heard. Did you notice any movement together with that? A. No, not at all. In this same burst of flame which followed this immense upheaval I saw, clearly and plainly, the vessel rise in the water a distance which apparently was three yards, but which in reality must have been greater, and then settle down before the light of the explosion went out. (P. 63.)

28. Capt. Stevens, City of Washington. Q. Did you see the Maine lift at all? A. I did not, I being on the opposite side and looking through. I seen her mainmast and part of her outline, but I didn't see her lift. (P. 220.)

29. First Officer Cornell. Q. How much did she lift at the first sound you heard? A. She lifted most nearly all out of the water. She raised up considerably, but it was kind of dark, and how high she lifted up I couldn't exactly say. We saw her raising by her lights. (P. 219.)

plosion. Upon this testimony the court found that "the forward part of the ship was lifted to a marked degree at the time of the first explosion."

The testimony established the fact that bunker "A16" containing 40 tons of soft coal was separated from room A14, containing several tons of powder, by only a steel bulkhead against which the powder tanks rested,[30] yet the official statement is that " bunker A16 was accessible on three sides at all times, and on the fourth side at this time on account of bunkers B4 and B6 being empty."

Engineer Bowers, who alone testified as to the condition of the thermostats, says they didn't work very well, sometimes ringing when the bunkers were empty,[31] but the report states that they were in working order.

Throughout the entire proceedings there was manifested a strong desire to establish facts tending to support the theory of a submarine mine, and thus relieve the officers and crew of the *Maine* from any suspicion of negligence. This intense desire, as natural as it was commendable, necessarily tended to incline the court to give undue weight to evidence favorable

30. Gunner Hill. Q. I will show you the plan. This bulkhead (pointing to a fore and aft bulkhead) divides the magazine from coal bunker A16. Did powder touch that bulkhead in its stowage? A. Yes, sir; it did aft here. Q. It did in the after part of the magazine? A. Yes sir; and it did in the forward part, too, because there was a lot of saluting powder stowed there. (P. 144.)

31. P. A. Engineer Bowers. Q. Did you have the usual thermostats in the bunkers? A. Yes, sir; but they didn't work very well. Sometimes they would ring when there was no coal in the bunker. (P. 154.)

to this theory and to discredit witnesses who gave unfavorable testimony, and thus affords an explanation of the remarkable findings cited above without calling in question the motives of anyone concerned. Under all the circumstances it was impossible that the evidence should be impartially weighed, and equally impossible to say how much bias is consistent with an honest effort to ascertain facts. But an accident is not proof of negligence—the evidence conclusively demonstrates that all ordinary precautions had been observed by all on board—hence we may proceed with our investigations without fear of harming either the living or the dead of that unfortunate crew.

From the temper of the court as indicated by its published proceedings, we should expect the official report to deal largely with the state of discipline maintained, the precautionary measures employed to avoid accidents, etc. In this expectation we are not disappointed: Fifty-two lines are devoted to the exculpation of officers and crew, while but seven are given to the explosion and 18 to the condition of the wreck. Except in the two items already mentioned, the findings under the first head are fully warranted by the testimony, and the prolixity of the report is pointed out merely as further evidence of the bias of the court. As to the number of explosions and the attendant movements of the vessel the findings have already been noticed. Under the third head the court finds as follows: "A portion of the port side of the protective

deck, which extends from about frame 30 to frame 41, was blown up, aft, and over to port. The main deck, from about frame 30 to about frame 41, was blown up, aft, and slightly over to starboard, folding the forward part of the middle superstructure over and on top of the after part. This was, in the opinion of the court, caused by the partial explosion of two or more of the forward magazines of the *Maine*.

"At frame 17 the outer shell of the ship, from a point 11½ feet from the middle line of the ship, and 6 feet above the keel when in its normal position, has been forced up so as to be now about 4 feet above the surface of the water, therefore about 34 feet above where it would be had the ship sunk uninjured. The outside bottom plating is bent into a reversed V shape (A), the after wing of which, about 15 feet broad and 32 feet in length (from frame 17 to frame 25), is doubled back upon itself against the continuation of the same plating, extending forward. At frame 18 the vertical keel is broken in two, and the flat keel bent into an angle similar to the angle formed by the outside bottom plating. This break is now about 6 feet below the surface of the water, and about 30 feet above its normal position. In the opinion of the court this effect could have been produced only by the explosion of a mine situated under the bottom of the ship at about frame 18 and somewhat on the port side of the ship."

It will be seen that, briefly stated, the court found

that the *Maine* was injured in two distinct and dissimilar ways: 1. Portions of the port side of the two decks over the boiler-room were blown up and folded back. 2. A section of the bottom of the vessel 15 by 32 feet, forward of the boiler-room on the port side was driven in and, with the adjacent portion of the keel, forced upward till some parts were 34 feet above their normal position. But, as will be seen further on, these injuries were but a small part of destructive effects so extensive as to include the practical annihilation of almost the entire forward half of the vessel, the small part that favored the theory of two unlike explosions.

The conclusion reached in the first paragraph quoted has never been seriously questioned, but that arrived at in the second has not met with the same favor. It must be admitted, however, that at first glance, the mine theory seems plausible. Surely some tremendous force operated from below—what could it have been if not a mine? An answer to this question should be given before objections to the mine theory are urged.

By reference to plates furnished by the Government Printing Office (see "Affairs in Cuba") we are able to locate definitely the magazines referred to in first paragraph, and learn something of the structure of the ship. From plate marked "Hold Plan" we learn that these magazines occupied several rooms situated between frame 18 and frame 30 and extending from

bunker A16 to middle line of ship, and that from frame 30 to frame 41 was a boiler room. Referring now to another plate—"Longitudinal Section"—we see that above these magazines there appear to be four decks, two of which extend over the boiler-room. In these ammunition rooms were stored many tons of powder—in A14, separated from the 40 tons of soft coal in bunker A16 by only a one-quarter inch steel plate, there were about 12,000 pounds—in A13 not less than 20,000 pounds (*Maine* Report, p. 292).

Let us now inquire how far the explosion of "two or more of the magazines" will account for the condition of things set forth in the report and established by the evidence.

Having noted that the magazines were nearly 20 feet below the surface of the water, we first inquire as to the probable effect of the explosion of only a few tons of powder out of the immense quantity stored in the *Maine's* forward magazines. Certainly the first effect would be to shatter everything in the immediate vicinity of the explosives—the decks above with their ponderous plates and deck-beams, and that beneath with its supporting frames and reverse angle-irons. The outer plating, however, being water-tamped, would not be blown downward, but immediately beneath the exploding magazines would doubtless be seamed and fractured, especially along the frames and longitudinals. The downward stroke received by the inner plating and transmitted to the frames would

drive them against the outer plating and would cause it to be bent in between the frames exactly as if the water were driven against it instead of it against the water.[32] "It is thought that an explosion of this kind would be in its nature progressive, and the accumulation of gases would become more and more rapid till all obstacles were removed" (Commander Converse, *Maine* Report, p. 273). If our expert's theory is correct there would be a slight interval during which the expansive force of the accumulating gases would be exerted downward upon the water through the broken but water-borne plating, and upward against the superincumbent decks, and would thus tend to lift the forward part of the vessel. If a tenth part of the powder should explode we might expect everything in this part of the ship to be blown overboard, and the sides of the vessel above the water-line to be blown away. The fore and aft force of the gases would meet with more resistance above the water-line and might break the shell in two, both forward and aft of the region of complete interior destruction. The forward part being small and supported against forward pressure at and near the keel only, while acted upon by explosive force from keel to highest deck, would tend to roll forward, lifting the keel at forward fracture

32. **Chief Gunner's Mate Olsen and Wm. H. Dwyer testify that in the region of greatest injury the inner plating of the double bottom is driven downward just as the outer plating is driven upward. This condition of things would necessarily result from an internal explosion, but cannot be accounted for upon the mine theory.** (Pp. 71-234-275.

and initiating a rotary motion about an axis parallel to the beams.

This would complete the direct effect of the explosion, but we have yet to trace its indirect effects. At this instant we have an immense shell 96 feet long and from 30 feet wide at frame 17 to 57 feet at frame 41. Upon this huge box-girder there is acting an upward pressure of 2,500 tons and a lateral pressure of 1,400. Running through the bottom of this shell is the keel binding the 50 or 60 feet of intact prow to the uninjured after half of the ship. By the breaking of frames and the destruction of stanchions, beams, decks and bulkheads the shell has lost much more than its "factor of safety" and must yield to the enormous pressure which it has till now sustained. That part of the port side under the magazines—the part from frame 18 to frame 30—has been most injured by the explosion and will first yield to the upward pressure. But the entire bottom must quickly follow, and as it rises the keel must either bend or break. If it bends, the two uninjured parts of the vessel must be drawn toward each other. The after part of the forward section has already been started upward by the rotary motion imparted as before explained, and will be drawn up still more by the bending keel. The 200 tons of longitudinal pressure upon the prow will cooperate with the keel as the latter hauls the forward section aft, while the bending of our "box-girder" will break what is left of its side flanges, or part them where already

broken by the explosion. The momentum acquired by this forward section from the pull of the keel and the push of the water will carry it still further aft and the keel may be bent into a very acute angle, in which case this angle will be forced to a considerable height before the mass finally comes to rest, stem first, in the muddy harbor bottom. The upheaval of keel and bottom plating is therefore fully explained without assuming a mine explosion.

The official report indicates no such extensive destruction as above described. Indeed it very inadequately describes—not to say grossly misrepresents—the condition in which the wreck was found. The published evidence proves beyond peradventure that the destruction was as thorough and far-reaching as that above outlined, and not unlike it in character.[33]

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33. I.—Gunner's Mate Rundquist. Q. Yet you say that it (the armor plate) was not resting on anything but mud? A. It was resting on the mud. There was a big piece of the ship there that was entirely gone. The bottom of the ship was all blown up. There was nothing there. (P. 91). II.—Ensign Powelson. He (Rundquist) went down near the conning tower supports, as before, and got into the mud and walked into the ship's side. He followed it forward until he came to the break. I was able to distinguish the bubbles more clearly this time, and concluded that the break in the ship's side was at the same frame as the frame on the port side—frame 41. (P. 214.) Q. Will you please tell the court, as far as you can, the condition of the wreck? A. The forward part of the ship, forward of the after smoke pipe, has been completely destroyed as far as all appearances go. Q. You think the ship on the port side opposite that support is entirely gone? A. Yes, sir. Q. Entirely blown away? A. Yes, sir. (Page 43.) III. Gunner Morgan. Q. What is the condition of the port side of the ship? A. The place I was at was all gone. (P. 67.) IV. Gunner's Mate Olsen. Q. Where did you find the bottom entirely blown away? A. Right about here (indicating). Q. Between frames 24 and 28? A. Yes, sir. Q. Do you think the ship is cut right in two there (at frame 41). It is cut in two from out here to pretty near the midship line.

Our divers all testify that from frame 18 to frame 41 the interior of the vessel was utterly destroyed—stores, stanchions, bulkheads, decks, everything carried away; the shell was found broken and extensively

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(P. 75.) V.—Gunner's Mate Smith. Q. You described that forward portion of the 6-inch reserve magazine as being entirely gone. The outside of the ship has entirely disappeared? A. Yes sir. Q. There is a hole through the bottom of the ship at that point? A. The side and everything is gone right away from it. Q. Then, there must be a hole through the ship? Yes, sir. Q. How high up does that extend—that hole? Here is the side of the ship, now, and you go down underneath. This is entirely gone, a certain portion of it (indicating)? A. Entirely gone; yes, sir. Q. How high up on the side does it extend, or is that all gone, clear up to the water? A. Yes, sir; you can take me and lower me right down from the diving launch down into the mud, and I can walk. Q. That might be, too, and if you were inside of the ship there might be continuous metal outside of you. A. No, sir. Q. Suppose the part you say is blown away is a hole with a portion of the ship's side still over it. Could you walk athwartships out of the ship or into the ship without catching your tubes and life-lines? A. No, sir; I could not. Q. Then if there were portions of the ship still standing above the hole? A. I could feel my life lines hauling over it. Besides, I have a guide line right from the diving lines down, and made fast into the shell room—into the after part of it. (Pp. 81-82). VI.—Seaman Reden. Q. Tell the court all you saw down there. A. The first time I went down I went down where the dynamo room is. There is nothing left there whatever, only some plates and beams. I cannot tell if there has been a dynamo there, or anything else. Everything gone entirely. . . . As I walk along forward from aft on the port side, there is nothing left of the ship whatever, out for 30 feet I should think. Everything is gone underneath there. You can walk from the bottom right into the ship, only you go down in the mud about two feet. Q. How far toward the starboard side of the ship did you go when you were down? A. I must have been, I should judge, away over—right where the turret ought to be. Q. You do not think there was any ship's side left there? A. No, sir. Q. When you went down did you recognize anything that you can describe? A. I couldn't recognize nothing, sir. I know the compartments well, and if I seen anything I could have recognized them; but there was nothing left to recognize, sir. (Pp. 83-84-85-87.) VII.—Chief Gunner's Mate Olsen. Q. Please state what you found. A. . . . I found where I went down, at frame 31, at the armor plate, that I could feel the bottom of the ship forward for ten frame spaces. At the end of ten frame spaces and at frame 31, I found her to be cut off entirely. (P. 249.) VIII.—Capt. Sigsbee. Q. The walls amidships on both sides, to nearly amidships, were broken down? A. Especially so; very much disintegrated. It is all gone on the port side. (Affairs in Cuba, P. 484. See also Pp. 69, 70, 71, 72, 74, 86, 90, 109, 227, 228, 230, 231, 233, 234, 248, 250 and 275.)

displaced in several places, one of which was about a hundred feet from the location assigned to the mine. The comparatively uninjured part of the vessel forward of frame 18 was hauled aft 72 feet, partially telescoping the shell left by the explosion, thrown upon its beam ends, and left with stem in the mud where frame 22 should be found. The keel was not only bent but for more than 20 feet practically folded back upon itself exactly as might have been expected as the indirect results of an internal explosion.[34] Between the displaced prow and in the uninjured after part of the ship the divers walked about unimpeded, while no beams or wreckage above their heads obstructed the free movements of life-lines or other portions of the diving apparatus. Three of the divers report a hole in the mud about frame 22 where the stem now lies,[35] but they differ greatly as to its depth

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34. See Exhibit L.

35. I.—Powelson. "Gunner Morgan reported that in walking on the bottom he fell into a hole on the port side and went down into the mud. He also reported that, as far as he could judge, everything seemed to be bent upward in the vicinity of this hole." (P. 45.) II.—Gunner Morgan. Q. It has been stated in this court by another witness that you fell into a hole. How about that? A. There is a place there where it is deeper than any other place. That is where the soft mud is. Q. You could find no bottom to that hole at all? A. Yes, there is bottom there. Q. How far did you get in? A. About half waist. Near the arm-pits. Q. What was the nature of the hole. Did you find the boundaries of the hole at all? A. No; it is an open space, very soft, slushy mud. Q. But you did not touch the edges of this hole? A. It is simply an incline, but nothing to make a round hole. Q. You do not know how big the hole was then? A. No, sir. Q. You do not know how the metal was bent at the hole? A. There was no metal at the hole. (P. 67.) III.—Ensign Powelson. (Explaining work of Gunner's Mate Smith): "At the point where the flat keel goes into the mud he found a hole in the mud. He made out that the bottom of this hole was about six inches deep." Q.

and width, nor would either description answer for a mine crater. Besides, such a hole—one whose depth equaled its width—would be a mechanical impossibility in mud so soft that divers sank in it to their waists. Dwyer, a very intelligent diver, searched for this hole but found only a place scooped out by the ram-plate, and the mud heaped up on one side only.[36] The note on Powelson's sketch—"hole 7 feet deep and 15 feet in diameter"[37]—is not warranted by the testimony of either of the divers, yet it was evidently this note that misled Dr. Bell (Nat. Mag. Aug. '98) and M. H.

Six inches, you say? A. No, sir; he found he hole to be about six feet deep and about fifteen feet in diameter. (P. 211.) IV.—Gunner's Mate Olsen. Q. Did you see anything of a deep impression in the mud forward there? A. Yes, sir; right at the bow of the ship. Q. Under the bow, do you mean? A. Right where the keel goes into the mud I found a big hole in the mud. I could go right down into the hole and extend my arms and feel the top of the hole. It was about level with my armpits. Q. How deep was it? A. About four or five feet. Q. Was it solid at the bottom? A. It was muddy. It was seemingly more solid than any other mud higher up. Q. How wide was this at the top? A. It extended out from the ship four or five feet, then it seems to extend round the keel-shaft and round the keel. (P. 267.) V.—Gunner's Mate Smith. Q. Do you remember finding a hole in the mud? A. Yes, but in a different place. It is by the bow where I found the hole. Q. How deep was this hole, do you think? A. I should judge seven feet. Q. How wide was it—the diameter, I mean? A. About the same, sir. Q. Was the bottom of the hole hard at this place? A. The mud was a little harder than the other mud. You would not sink over 18 inches in that mud. (P. 241.) Q. Referring to the hole that you testified to on a previous occasion. . . . How deep do you think it was? A. I should judge it to be about seven feet deep. Q. How wide across the top? A. About the same, sir (P. 268.)

36. Wm. H. Dwyer, Submarine Diver. "In regard to the depression in the mud which you spoke of, I searched for that, and find no hollow such as was described. What I found was that the ram, when the bow fell over on the side, had turned up quite an amount of mud, and on going from top of that aft I appeared to go down in a hollow; but going from aft forward you find the general bottom, and then the mound raised by the ram." (P. 276.)

37—Exhibit L, Maine Report.

Wilson (Nat. Review, July '98). The center of the hole is fully 8 feet from the location assigned to the mine, hence the "tell-tale crater" seems to be a shadowy myth.

From what has been said above it would appear that all the facts set forth in the report, and all the other far more startling and significant facts established by the evidence before the court, but strangely ignored in the findings, can be fully explained upon the theory of the explosion of the ship's magazine alone.

Before considering the mine theory it may not be out of place to state that a mine of high explosives always produces two very distinct and very unlike effects. First, there is the shock or vibration, and "Thor's hammer could not deliver a more annihilating blow, and it is this first effect that shakes the earth and shatters ships." But this shock does not crush, the amplitude of the vibrations being very small—it damages a vessel as an ordinary heavy explosion breaks windows. Secondly, a volume of water is driven bodily with great violence in the line of least resistance, and this may crush in and carry away the parts broken by the shock or not strong enough to resist this hydraulic avalanche. It is well-known that water plays the part of a solid when acted upon by an instantaneous force, hence a mine ordinarily cuts an inverted cone from the water as it would from a mass of ice or stone. The diameter of this cone determines the area of greatest efficiency and for this reason large mines are placed at considerable depth.

One objection to the mine theory suggests itself to the most casual reader of the report. The court finds that a section of the bottom plating 15 by 32 feet was bent upward and, a part of it at least, forced to a point 34 feet above, and that this was the work of the mine. But to reach this point the plating must pass through several decks that are not yet blown away—they were found to have been blown away by the second explosion. Again, our inspection of the hold plan of the vessel has revealed the fact that this displaced section was directly beneath the ship's magazines that were found to have exploded.[38] This fact should be constantly kept in mind; it is important—very important—though not mentioned in the report. When this portion of the bottom was forced upward by the mine, as found by the court, it necessarily carried these magazines with it, and a large part of the explosives were above the decks said to have been blown upward by their explosion. If we assume that the two explosions were practically simultaneous, we not only discredit one of the findings of the court,[39] but we make the effects attributed to the first explosion impossible, as the downward action of an explosion of sufficient violence to destroy ponderous steel decks 70 feet away, would far more than counteract the upward force of the largest mine that would have been employed for such a purpose.

38—See "Hold Plan"—Affairs in Cuba and "Exhibit L"—Maine Report.

39. "Two explosions with a distinct interval between." (P. 280.)

Our chief expert witness, Capt. Converse, gave it as his opinion that only a very large mine of low explosives, situated at some distance below the bottom of the vessel could bend the bottom plating and keel as shown in Ensign Powelson's sketch.[40] Now large mines are found to be most effective at a depth of about 60 feet, as shown by experiments upon the *Oberon,* hence 8 or 10 feet, the greatest distance possible in this case, would certainly be considered quite close. But let it be granted that by "some distance" the expert meant 8 or 10 feet. A mine 10 feet below frame 18 would be 53 feet from frame 31 where the bottom is entirely missing, and 53 feet of "water-tamping" would have to be set in motion to crush in frames and reverse angle irons and carry the bottom entirely away from its natural position; while only 10 feet of such tamping would have to be set in motion directly above the mine to liberate the expanding gases. In such case a large part of the explosive force would act directly upward, and the plating at frame 18, instead of being simply forced upward, would have been shattered to fragments and scattered far and wide over the harbor.

Again, the gases from a mine "somewhat to the port side" that should produce such effects at a hori-

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40. Commander Converse. Q. To what kind of an explosion do you attribute the force that caused this bending of plates and keel on sketch? A. I am of the opinion that it could be produced by the explosion of a submarine mine containing a large amount of the lower explosives—gunpowder or similar—not in contact with the ship, but some distance below it. (P. 259. See also P. 272.)

zontal distance of 52 feet—twice the greatest distance at which a mine was ever known to break through the shell of a ship—and would partly escape at the side of the ship, and a large volume of water would be thrown up; but there was no such upheaval of water. As Capt. Converse rejected the theory of a gun-cotton mine as inadequate to explain the phenomena presented,[41] as he would not say that a mine so situated as to inflict the injuries received by the *Maine's* bottom could be expected to explode her magazines,[42] as he declined to say that a certain established fact was inconsistent with the theory of an internal explosion,[43] one is led to suspect that he had little faith in the theory finally accepted by the court.

Again, if a mine destroyed the *Maine* it was an observation mine—a contact mine being out of the question.[44] If an observation mine was employed, a cable connected it with the firing station, and one can hardly conceive how the court could have failed to

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41. See P. 259.

42. Commander Converse. Q. Could such a mine, if producing that effect, also set fire to the ship's magazines? A. I am unable to answer that question. (P. 260.)

43. Commander Converse. Q. Do you think that . . . it would have been possible for any man to have escaped alive? A. I think it not impossible. (P. 274.)

44. Capt. Sigsbee. Q. If that mine had been placed there how would it have been exploded? A. I infer they never would have put a contact mine there that would have been exploded by contact with the bottom of the vessel, because other vessels were coming and going all the time, but an electric mine, having wires leading ashore or elsewhere. (Affairs in Cuba, P. 484.) II.—"Such mines, when sunk in harbors, are almost invariably discharged by means of electric currents conducted over a wire leading from the engine of destruction to some place on the shore where a battery can be housed, guarded, and attended by trained operators. (Affairs in Cuba, P. 6.)

cause a search to be made for this cable had there been either implicit confidence in the mine theory or a sincere desire to secure all available facts pertaining to the case. To have picked up the cable would have been a very simple matter, and its discovery would have afforded conclusive evidence of a mine; and if more convincing proof had been desired, it could have been obtained by following the cable to the wrought iron anchor left imbedded in the mud—the vital question could thus have been authoritatively settled in a single day. Nor is this all. By following this cable shoreward the "firing casemate" itself would have been discovered, and in the person of the officer in charge on the 15th day of February would have been found the arch assassin of the nineteenth century. Why was no search made for this cable? Capt. R. B. Bradford, testifying as expert witness before the Senate investigating committee, says the cable could easily have been drawn in from the shore.[45] But the very obliging captain, like many other witnesses called in, seems a little over solicitous not to disappoint the committee. For example, when it is desirable to show that a mine adequate to inflict the injuries sustained could have been placed under the *Maine,* he testifies that this could have been done despite the utmost vigilance of the crew;[46] but when proof is needed that

45. Commander Bradford. Q. Why should not these cables leading to the torpedoes have been destroyed after the explosion? A. It was a very simple matter to haul them in. (Affairs in Cuba, P. 478.)

the Spanish government, and not a private party, was responsible, he informs us that mines cannot be placed without attracting attention.[47] Again, when evidence is wanted that a mine, and not our ship's magazines caused her destruction, he says that from what he has read of the testimony there seems not to have been any serious explosions of the magazines, and that a mine of 300 pounds or less would do all the damage that was done to the *Maine,* and that enough modern explosives to do "that damage" might be conveyed in a rubber bag—a mine was not a necessity.[48] But when the complicity of the Spanish government was to be established he was very sure that a mine of extraordinary size was employed—no ordinary mine "would be sufficiently powerful to produce the results produced in the *Maine.*"[49] When the absence of dead fish is to be explained he states that as a result of submarine

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46. Commander Bradford. Do you think it possible for a mine to have been placed there with the discipline probable on board? A. Oh, yes; I think it was possible. Q. How? A. There are various ways. . . . (Affairs in Cuba, 473.)

47. Commander Bradford. Q. In your study of this question, have you ever known of private individuals putting torpedoes in harbors to destroy ships? A. I never heard of it. Q. It costs a great deal of money? A. Yes, sir; and it cannot be carried on without attracting attention. (Affairs in Cuba P. 475.)

48. Commander Bradford. Q. What would be the size and general character of that mine? A. It would be rather difficult to estimate the amount of explosive, but I would say that 300 pounds of modern explosive would do all the damage that was done to the Maine and very possibly a smaller amount. (Affairs in Cuba, P. 472.) Q. You also said that dynamite or modern explosives might be conveyed in a rubber bag? A. Yes, sir; and I want to enlarge on that point. It does not follow of necessity that that damage could not be done in any other way than by the use of a submarine mine. (Affairs in Cuba, P. 477.)

49. Commander Bradford. Q. Would the ordinary torpedo be sufficiently powerful to produce the result produced in the Maine? A. In my opinion it would not. (Affairs in Cuba, P. 475.)

explosions "many fish apparently dead are only stunned, and after a time recover and disappear," and that in this case "there was ample time for the fish to disappear before daylight."[50] Had an ordinary cable been employed and laid in the usual way it could not have been hauled in from the shore (See Armstrong's "Torpedoes and Torpedo Warfare," Chap. VII, or any good encyclopedia). But conceding a special cable to have been employed, and this 1,500 or 2,000 feet of cable to have been miraculously preserved from settling into the thicker mud during the weeks or months it had been lying there, (the *Maine* had been lying in the harbor more than three weeks), still a single glance at "Exhibit K," (*Maine* Report) will show that to have drawn it from under the debris would have been next to impossible.

Capt. Bradford does not agree with Capt. Converse as to the character of the explosives employed, but accepts the popular theory of a gun-cotton or similar mine,[51] but the absence of dead fish is strong circumstantial evidence against this hypothesis. Our naval commission practically ignored this well-known effect of mine explosions, and it would have been more to

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50. Commander Bradford: "Many of the fish that appear to be dead after a submarine explosion are only stunned, and after a time recover and disappear. The explosion of the Maine occurred at 9:40 p. m. I consider that there was ample time for the fish to have disappeared before daylight." (Affairs in Cuba, P. 481, note.)

51. Commander Bradford. Q. In your opinion, what kind of a mine must that have been to have the effect shown there? A. It must have been a mine of what is termed "high explosives," I think. (Affairs in Cuba p. 472.)

the credit of our witnesses if the Senate committee had shown like discretion. Capt. Sigsbee's suggestion that the fish may leave the harbor at night,[52] and his other hypothesis that the Reconcentradoes ate them,[53] awaken our pity for a faithful officer whose mental strain has driven him to catch at such straws. The theory of another witness that the fish floated out to sea during the night, is abusrd in view of the fact that the water about the ship was covered with light wreckage that was not thus carried away.[54] The suggestion of expert Bradford that because some fish apparently killed revive in a few minutes, all fish brought up by a mine explosion will revive in time, if left alone, is worthy of Capt. Sigsbee. However, the statement of another expert, Admiral Irwin,[55] that ordinarily after a mine explosion no fish are seen on the water, taken in connection with his other statement that "at 30 feet depth a mine produces hardly any disturbance on the surface, even to a bubbling"

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52. Capt. Sigsbee: "Again, they say the fish leave the harbor and go to sea at night." (Affairs in Cuba, P. 484.)

53. Capt. Sigsbee: "The ship was blown up at 9:40 p. m., and even though there were dead fish, no one knows where they might have gone next morning. In the next place, I fancy if any dead fish were available, the reconcentrados would be glad to get them." (Affairs in Cuba, P. 484.)

54. See Affairs in Cuba, P. 500. Question by Senator Frye.

55. Admiral Irwin: "The explosion of a mine at a depth of 30 feet would hardly make an ebullition, even when there is nothing on the surface. . . . When I got below 4, or 5, or 6 feet, the smaller the water column thrown up, and at 30, or 35, or 40 feet, hardly a disturbance on the surface, even to a bubbling." (Affairs in Cuba, P. 503.) "During my work in Mobile Bay, and it is fine fish producing water, in three or four weeks' work I never saw one dead fish. . . . The Mare Island Straits abounds in fish, and I have had occasion to fire a great many torpedoes in those waters, and I never saw a dead fish in those waters while I was there." (Ibid. p. 499.)

varies the monotony somewhat and awakens a different feeling. Capt. Sigsbee's statement that an explosion inside the vessel would have killed fish the same as an external explosion,[56] was not well considered, as the magazines in question contained no high explosives.[57] Had the presence of fish in Havana Harbor, or the fatal effects of a mine explosion upon fish, really been doubted, such doubts could readily have been confirmed or dissipated by an experimental explosion.

Another objection is this: A mine of high explosives placed near enough to the bottom of the vessel for all the gas to escape through her hold, "would have cut a well defined hole blowing that part that was cut out into very small fragments"[58]—such a hole as was discovered and photographed by a New York "yellow journal" immediately after the catastrophe. Ensign Powelson says[59] "The mine could not have been very

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56. Capt. Sigsbee. Q. Why would not that (an internal explosion) have killed the fish? A. I think it would. (Affairs in Cuba, P. 484.)

57. Gunner Hill. Q. Was there anything stowed in the magazines and shell rooms in the way of high explosives? A. No, sir. (P. 145.)

58. Commander Converse: "Were the mine in contact with the ship, or quite close to it, I think the effect upon the bottom of the ship would be—depending, of course, upon the size of the mine—to blow to pieces that part of the ship directly over the center of the explosion. In other words, that the violent explosive would cut a hole, blowing that part that was cut out into small fragments." (P. 259.)

59. Ensign Powelson: "On the bottom forward, where the frame was thrown up, it would seem to me that the force was communicated some distance through the water, because this thing was lifted up instead of being battered in. It was a force that was cushioned in some way, because the diver tells me there was a bulge in plates between the two frames. . . . It struck me, as I was looking at it, that the mine there could not have been very close to those plates that were lifted up, because, as I say, the plates are not so much damaged as bent in the form of a V and raised up a vertical distance." (P. 112.)

close to the plates that were lifted because the plates are not so much damaged as bent in the form of a V and raised up a vertical distance." Again, a mine so situated as to find vent through the vessel at frame 18, would have damaged the bottom at frame 31, 52 feet distant, by shock only, and would not have forced it upward. Furthermore, the hot gases escaping into the vessel would have destroyed or discolored the paint on the bottom plating, at least about the fissures; but no such discoloration occurred. The explosion of the magazines burnt all the felting off the forward part of a boiler several yards from the nearest explosives[60] —surely a mine near the bottom plates would have injured their coating of paint. No wonder that Capt. Converse rejected the theory of a mine in close proximity to the vessel's bottom.

The objections to the theory of a remote mine are not less serious. The bottom of the vessel was crushed in from frame 15 to frame 41[61]—more than 100 feet—hence the mine would have to be deep enough to give the inverted cone marking its effective field, a base 100 feet in diameter—a condition of things utterly impossible with a space of not more than 12 feet between the vessel and the bottom of the harbor. Then, too, with such a destructive area, or even a destruc-

60. Wm. H. Dwyer: "The felting was all burned off the forward part of boiler B." (P. 263.)

61. Ensign Powelson: "The ship yielded at 17 and also at 15. Frame 15 was blown in." (P. 109.) "I concluded that the break in the ship's side was at the same frame as the frame on the port side—about frame 41." (P. 214.)

tive zone of 64 feet diameter, as implied in the decision of the court, the mine could not find vent through the vessel and an upheaval of water must necessarily result; but there was no such upheaval.

The bending of the keel involves the shortening of the ship, and from Ensign Powelson's sketch (Exhibit A) the actual shortening was fully 72 feet.[62] This shortening involves the hauling of the forward part of the ship a long distance aft. If we assume that not more than two thirds of the forward part of the ship was blown overboard, there would still remain a thousand tons to be thus removed. Bearing in mind that the direct destructive action of a mine is practically instantaneous, lasting but a small fraction of a second, it follows that the mine theory involves the practically instantaneous shortening of the vessel. An upward stroke that would shorten the ship by 72 feet, even after 2,000 tons of material had been blown overboard, would necessitate the intantaneous movement of forward and after portions through distances inversely proportional to their weights, and aggregating 72 feet, and this would require a keel of supernatural tensile strength. But the evidence shows that there was no such movement of the after part at least, nor was the keel from Vulcan's forge. But this hypothetical stroke was given before the superstructure was injured by the explosion of the magazines, hence the bending

62. See Exhibit L.

of the keel and the consequent shortening of the ship under such circumstances involves still other miracles. In brief the report is self-contradictory in attributing to a first explosion effects that must follow those attributed to a second, and the effects assigned to the former involve paradoxes that no hypothesis can harmonize. With slight changes in phraseology, the important findings of the court might be stated thus: "In the opinion of the court, a mine under the bottom of the ship at about frame 18 exploded, and by this explosion a section of the outer plating of the ship's bottom 15 feet broad and 32 feet in length (from frame 17 to frame 25), and carrying many tons of powder was doubled back upon itself against a continuance of the same extending forward," and forced upward through the superincumbent decks, part of it to a point 34 feet above its normal position. The court also finds that this explosion broke the vertical keel at frame 18 and forced it upward through four decks supported by many tons of massive steel deck-beams to a point 30 feet above its proper place and at the same time shortened the ship about 72 feet. The court further finds that after a "short but distinct interval of time" a part of this upheaved powder exploded carrying away the decks through which it had just passed, blowing "that portion of the port side of the protective deck which extends from frame 30 to frame 41, up, aft, and over to port; and the main deck from about frame 30 to frame 41, up, aft, and

slightly over to starboard, folding the forward middle part of the superstructure over and on top of the after port."

Thus paraphrased, the report gains in clearness by narrating the events in their proper order, by correctly locating the exploding magazines as well as the exploding mine, and by expressly stating some things that are necessarily assumed in the report, but not always supplied by the casual reader. But it must be admitted that while the report thus gains in perspecuity it loses somewhat in its most vulnerable point—its credibility—and in the suggested form might not have fully satisfied the yellow journals and their readers, nor, indeed, have stirred to action a President who seemed loth to involve the country in war.

63.—I. 37. The condition of the vertical keel and flat keel at frame 18 was ascribed by the court of inquiry of 1898 to the direct effect of an explosion exterior to the ship in that vicinity. Because of its better opportunity for a detailed examination of this wreckage, now fully exposed, the board concludes that the external explosion was not in the vicinity of frame 18. The board believes that the condition of the wreckage, other than that of B and C strakes from 27½ to 33 described hereafter, can be accounted for by the action of gases of low explosives such as the black and brown powders with which the forward magazines were stored. The protective deck and hull of the ship formed a closed chamber, in which the gases were generated and partially expanded before rupture.—(Second Report, Congressional Record, Dec. 14, 1911.)

The condition of B and C strakes from 27½ to 31 is not alluded to in first report. Since the second report finds all else to be the result of an interior explosion it leaves the first mine theory without a vestige of support so far as the condition of the wreck is concerned.

38. The port garboard strake between 27½ and 31 was **dished upward** along its outboard edge as much as 24 inches from a straight line between 27½ and 31 (see Exhibit D 3), the dish disappearing about 31. At a buttstrap in this garboard strake midway between frames 30 and 31 the after plate and strap were found pulled away from the forward plate and upward fully 6 inches farther than the after end of the forward plate, having been

torn loose from the flat keel plate by parting the rivets on the seam between 30½ and 31.

39. B strake was reenforced for its entire length by a continuous longitudinal. This B plate parted the rivets along its inboard seam from 30½ forward to 27½ across the buttstrap at 27½ and aft along its outboard seam to 28.

40. The next plate outboard, C strake, was torn irregularly from 28 inboard to 29 outboard, and parted the rivets along the outboard seam as far aft as frame 33, remaining attached to B strake along its inboard seam from frame 28 aft. This plating, formed of B and C plates as just described, an area of approximately 100 square feet, **was displaced upward, inward, and to starboard through approximately 180 degrees,** having swung about an axis from about 30½ inboard and forward to about 31½ outboard and aft. (See Exhibits D 2, D 3, D 5, D 7.)

41. The transverse floor plates between the outer skin plating, above described, and the inner bottom plating were crumpled. The part of the inner bottom plating directly over this section of outside plating **was displaced inward and aft,** and crumbled in numerous folds. (See Exhibit D 4, folds marked "X.")

42. The longitudinal directly over the center of B plate parted its fastenings, broke about frame 28, was twisted, the forward end **was displaced upward** and left approximately 6 feet above its original position. (See Exhibit D 1, longitudinal marked "X.")

43. The board finds that the injuries to the bottom of the Maine, above described, were caused by the explosion of a charge of a low form of explosive exterior to the ship between frames 28 and 31, strake B, port side. This resulted in igniting and exploding the contents of a 6-inch reserve magazine, A—14—M, said contents including a large quantity of black powder. The more or less complete explosion of the contents of the remaining forward magazine followed. The magazine explosions resulted in the destruction of the vessel.—(Second Report, Congressional Record, Dec. 14, 1911.)

"Strakes" are fore and aft strips of plating—here about four feet wide. They are lettered from the keel, A (garboard), B, C, etc. The frames are four feet apart. With these facts in mind one can readily make a sketch showing the fractures described above.

To account for the break in B strake longitudinal at 28 the mine should be at or near this frame, but this would make the fracture at 33, outboard C strake, more than 20 feet from the mine and necessitate a destructive zone more than 40 feet in diameter—practically an impossibility under the conditions known to have existed. If we assume the mine to have been at 31 we place it 12 feet from the break in the longitudinal and in a region little injured. If we choose an intermediate position the mine will be too far away from both 28 and 33 and in an area in which the damage is not relatively great. If, however, we assume an internal explosion and bear in mind that the 100 square feet of B and C plating was acted upon by an upward pressure of sixty odd tons, and that this upward pressure was reinforced by the enormous upward strain on B strake longitudinal till it parted at 28, we fully explain all the conditions found to exist in the region under examination.

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